

A rich and interesting ornithological collection of 1500 skins, twenty-two eggs, five nests, and three skeletons, made by Mr. Kozlow, has been entrusted to the experienced hands of Mr. V. Bianchi, and its description is contained in "Mongolia and Cham," vol. v., "Aves expeditionis Kozlowi." Eight new endemic forms were discovered. The name Cham or Kham relates broadly to the whole Alpine country of south-eastern Tibet, and in a narrower sense it refers to the area upon which agriculture is possible at a certain height. In the latter sense the boundaries of Cham are still uncertain. The volume opens with a physico-geographical sketch of the regions traversed by the expedition, passing to tables of distribution and analyses of the different species. The chief interest of the collection is that it was made in localities previously unvisited by European naturalists. Four plates of birds appear at the end, with a map indicating the routes of Mr. Kozlow and his colleagues. The longitude is reckoned from Pulkova, 50° – 80° , the difference of longitude between Greenwich and Pulkova being 30° $19'$ $40''$.10. The classification of diatoms was entrusted to Mr. K. S. Merezkovsky, and Mr. N. A. Tatshaloff recorded the astronomical results of this important expedition, their work being contained in two shorter volumes.

THE AMERICAN PHILOSOPHICAL SOCIETY.

THE general meeting of the American Philosophical Society was held at Philadelphia on April 23–25. The opening session was on April 23, and morning and afternoon sessions were held on the following days, with an evening lecture by Prof. H. F. Osborn on April 24 at the hall of the Historical Society of Pennsylvania, which was followed by a reception to the visiting members and friends of the society. The sessions were largely attended. The meeting closed with a dinner at the Bellevue-Stratford on the evening of April 25.

Forty-two papers were presented, covering a wide range of subjects, but we are only able to find space for summaries of a few of them.

"Determination of Dominance in Mendelian Inheritance," Dr. C. B. Davenport. In studying heredity, where a single character is considered which one parent possesses and the other lacks, or a character that is contrasted in the parents, it is generally found that the offspring are alike, and like one parent only. From examples of poultry, of insects, of certain mammals, including man, and certain plants, in regard to inheritance that may be described as Mendelian, it is concluded that where a stronger determiner meets a weaker determiner in the germ, dominance is the result. When the character is present in one parent only we have the extreme case and typical Mendelian inheritance, but when the determiners are of nearly equal potency the Mendelian law is obscured.

"A Preliminary Report upon a Crystallographic Study of Hæmoglobins: a Contribution to the Specificity of Vital Substances in Different Vertebrates," Profs. E. T. Reichert and A. P. Brown. The primary object of this research was to determine whether or not corresponding albuminous substances are identical in different species. The results of the investigation, which has covered more than one hundred species of vertebrates, show:—(a) the crystals of oxyhæmoglobin obtained from any single genus are isomorphous, but unlike those obtained from other genera unless these genera are closely related or in the same family; (b) specific differences in angle and habit are obtained between crystals obtained from species of the same genus, so that it is generally possible to re-organise the species by the crystals; (c) the occurrence of several types of crystals of oxyhæmoglobin in the same species; (d) indications are found in the crystal angles of a substance in the molecule common to all hæmoglobins, no matter what the system of crystallisation. The application of this method of research to problems in zoological classification and in heredity was pointed out.

"The Effect of Certain Preservatives upon Metabolism," Dr. H. W. Wiley. Details were given of the work that Dr. Wiley is carrying on in the study of the effect upon the human organism of a number of preservatives commonly used in the preparation of foods, such as borax,

boric acid, salicylic acid and salicylates, sulphurous acid, sulphites, benzoic acid and benzoates, formaldehyde, copper sulphate, and potassium nitrate. Experiments with the first five of these preservatives show conclusively that their continued use, in quantities such as are used in food preservatives, hinders or prevents metabolism, and may seriously derange the functions of the organism. The other substances enumerated are still under investigation, but the results thus far obtained seem to indicate that they are equally injurious.

"Observations Regarding the Infliction of the Death Penalty by Electricity," Prof. E. A. Spitzka. This paper sets forth the history of "electrocution," the methods employed, and the phenomena observed in this mode of death, together with the *post mortem* findings, detailing the observations of the author, based upon thirty-one electrocutions at Sing Sing, Auburn, Dannemora, and Trenton prisons. Compared with other methods, "electrocution" is the most humane method of inflicting the death penalty, because of its efficiency, quickness, and painlessness, and it should be adopted in every State in the Union.

"A Comparison of the Albino Rat with Man in Respect to the Growth of the Brain and the Spinal Cord," Prof. H. H. Donaldson. A statistical study of the growth of the brain and the spinal cord in the white rat, in which the weight of the brain and of the spinal cord is recorded and compared with the body weight at various stages of the development of the animal. The results are plotted, and from these records logarithmic curves are drawn. When compared with the curves derived from the same data in the case of man, and plotted to a corresponding scale, a close similarity in the curves is noted.

"The Classification of the Cetacea," Dr. F. W. True. The opinion is expressed that the Cetacea are not directly derived from Zeuglodonts, and that their origin is not at present known; also that the white whale and the narwhal should not be removed from the family Delphinidae, and that the river dolphin, *Stenodelphis*, should, for the present at least, be placed in that family.

"Results of the American Museum Exploration in the Fayûm Desert of Northern Egypt," Prof. H. F. Osborn. The camp of the American Museum Expedition was located to the west of Qasr el Sagra, near the bone quarries opened by Beadnell. Remains of *Arsinoitherium*, *Palæomastodon*, and *Mœritherium* were obtained from these quarries. A reconnaissance into the Zeuglodon valley, near Gar el Gehannem, was described. The restorations of *Mœritherium* and *Palæomastodon*, made by Mr. Charles R. Knight under the direction of Prof. Osborn, were exhibited. From northern Africa the elephant stock migrated south through Africa, north into Europe, and north-east and east through Asia into the Americas. From a comparison of the ancestral elephant *Mœritherium* with the Sirenian *Eotherium*, it is believed that the sea-cows and elephants are derived from the same stock.

"Additional Notes on the Santa Cruz Typotheria," Dr. W. J. Sinclair. A presentation of the general conclusions reached as a result of two years' study of the Typotheria from the Santa Cruz formation of Patagonia. They appear first in the Notostylops beds (uppermost Cretaceous or basal Eocene), and become extinct in the Pampean (Pleistocene). It is generally assumed that the rodents and conies are related to Typotheria, but this does not appear to be the case; the resemblances are probably due to convergence. The Toxodontia and the Typotheria probably had a common origin. The Typotheria do not lend much support to the idea of a former land connection with Africa, showing no relationship with the recently discovered Eocene mammals from the Fayum province of Egypt.

"Progress in the Demarcation of the Boundary between Alaska and Canada," Prof. O. H. Tittmann. Details are given of the methods employed in determining the Alaskan boundary. The length of the boundary is about twelve hundred miles, extending from the Arctic Ocean south along the 141st meridian to near Mt. St. Elias, and thence along the coast strip of south-eastern Alaska. In south-eastern Alaska aluminium-bronze monuments are placed wherever it is practicable to do so, but, as most of the turning points in the line are inaccessible snow-clad peaks, they will be defined by triangulation connection with the

work of the Coast and Geodetic Survey. The initial point on the 121st meridian, which is also being marked by monuments, was determined by a telegraphic longitude circuit extending overland from Vancouver through Canadian territory, and by way of Seattle and the United States Government cables to Valdez, and thence overland to the boundary.

"A Living Representative of the most Primitive Ancestors of the Plant Kingdom," Dr. G. T. Moore. Chodat has derived the green algae from the Palmellaceæ. In this family he points out that there exist three principal stages or conditions:—(1) the zoospore condition; (2) the sporangium condition; and (3) the tetraspora condition. The author thinks that a better starting point is found in Chlamydomonas, which also shows three corresponding conditions in addition to the zoospore type, namely, the volvox type, the tetraspora type, and the endosphæra type. The tetraspora type of Chlamydomonas has developed into the Palmellaceæ, and thence into the algae and higher green plants. Even as high as the mosses and ferns a Chlamydomonas stage is to be seen in the male gamete.

"The Explosion of the Saratoga Septic Tank," W. P. Mason. The explosion of a tank used for the storage of sewage, and supposed to be due to the ignition of an explosive mixture of marsh gas and air, is discussed. The marsh gas is derived from the fermentation of the sewage, and the ignition is assigned to the generation of phosphine, which is supposed to have ignited spontaneously.

"Some Chilean Copper Minerals," Prof. H. F. Keller. The author describes a number of rare minerals containing copper from the mines in the province of Tarapaca, Chile. Among them the most interesting are pejoconite, a manganese ore containing a considerable proportion of copper; a new double sulphate of copper and magnesium isomorphous with chalcantite; and a beautifully crystallised sulphate and arsenate of copper, which could not be identified with known species.

"Absorption Spectra of Solutions," Prof. H. C. Jones. The object of the present investigation was to ascertain whether combinations between the solvent and dissolved substance had any effect upon its power to absorb light. Certain salts in the anhydrous state have very different absorption than when combined with water. A solution of anhydrous neodymium chloride in absolute alcohol gives absorption bands differing from those obtained when a few per cent. of water is added. The application of this observation to the author's theory of hydration is discussed.

"Effect of an Angle in a Wire Conductor on Spark Discharge," Prof. F. E. Nipher. The problem to be solved is to determine the real current direction in a wire through which a spark discharge is passing. The spark discharge was that of a long eight-plate machine. One terminal was grounded on a water pipe, the other was grounded in the air. A small wire bent at a sharp right-angle was placed vertically in the lines of the earth's magnetic field, and so connected that the negative discharge could be sent either up or down around the angle, and its effect recorded on a photographic plate placed under the angle. Very interesting photographic results were obtained, but the author does not consider that the main question was conclusively answered.

"Some Results of the Ocean Magnetic Work of the Carnegie Institution of Washington," Dr. L. A. Bauer. Dr. Bauer described the work of the *Galilee* expedition in the Pacific since August, 1905. The work accomplished, briefly stated, is as follows:—(a) magnetic observations have been made on the ocean areas which closely approach land observations in accuracy; (b) errors found in magnetic charts of the Pacific Ocean amount to 1° to 5° in declination (or variation of the compass) and in dip, and about 0.04 in the horizontal magnetic force. The correction of such errors, especially the error in declination, is of great importance for the safe and rapid navigation of vessels.

"The Investigation of the Personal Error in Double-star Measures which Depend on the Position of the Angle," Eric Doolittle. This paper gives the result of the determination of the constant personal errors, and also of the probable uncertainty of the measures of double stars made during the past ten years at the Flower Astronomical Observatory of the University of Pennsylvania.

"Relative Advantages of Various Forms of Telescopes

for Solar Research," Prof. G. E. Hale. Prof. Hale discussed different types of telescopes for solar research, describing particularly the equipment at the solar observatory of the Carnegie Institution at Mount Wilson, California. The advantages of the fixed horizontal telescope with heliostat were pointed out. The author also described the large spectroheliograph of this observatory, and exhibited a number of examples of photographs taken by means of this instrument, including solar prominences, faculae, and sun-spots.

"Photographs of Daniel's Comet," Prof. E. C. Barnard. The comet was photographed on thirty-eight nights with the Bruce photographic telescope of the Yerkes Observatory. The photographs showed that the most active period in the comet's history occurred nearly a month before perihelion, at which time changes occurred so rapidly that the appearance of the comet changed from night to night. Indeed, on comparing the Yerkes Observatory photographs with photographs made at M. Flammarion's observatory in France and at the Lick Observatory on the same night, marked differences in the photographs could be seen.

SOME RECENT AGRICULTURAL PUBLICATIONS.¹

(1) A CONSIDERABLE change has come over the Journal of the Royal Agricultural Society during the last few years. Founded in 1839, its earlier numbers contained many papers of great scientific and practical interest, and the student of agricultural science frequently has occasion to refer back to them for the writings of Daubeny, Pusey, Way, Lawes and Gilbert, A. Voelcker, and others of the great masters who contributed some of their best work to its pages. It cannot be said that recent numbers are up to the high standard of the older ones. Several causes have contributed to bring about this result. The journal only appears once a year, and men are often unwilling to hold back their papers from publication for so long a period. Much of the work done at the various colleges is directly or indirectly financed by county councils, who like to see something for their money; the results are therefore issued as separate bulletins by the councils or colleges concerned, and distributed among the farming community. Recently, too, some very vigorous competitors, including the Journal of the Board of Agriculture and the Journal of Agricultural Science, have arisen, and these publish much of what would, in the past, have found its way to the Royal Agricultural Society's Journal. The present volume is smaller in size even than the first one issued nearly seventy years ago! There has been a considerable change in the character of the papers. The original paper has almost disappeared; there is, for instance, in this volume not a single contribution from the various teaching centres, if we exclude the report of the zoologist and Mr. Archibald's notes on certain birds, while Rothamsted only contributes a short note. Instead, the papers are of a "practical" or a textbook nature; they describe accepted good practice on certain matters, or give information which could be found elsewhere if the reader knew where to look for it. There is much to be said for this, and the utility of some of the papers in the present volume is beyond question, but it is doubtful whether this is quite the best line to take up. The journal would almost certainly be more valuable to the practical man if it aimed at furnishing him with a record of the progress of agricultural knowledge in its various branches so that he could apply the newly discovered facts to his own methods, if he thought he would gain thereby, and be in possession of definitely established principles to guide him whenever it became necessary profoundly to modify his practice, as happened to many of the wheat-growers a generation ago, and is happening to the hop-growers now. Such a record would include a critical survey of the numerous county council feeding and

¹ (1) The Journal of the Royal Agricultural Society of England, vol. lxviii. (1907.)

(2) Bulletins 1 to 8 of the Midland Agricultural and Dairy College (Field trials in 1907.)

(3) Results of Experiments at the College Farm, 1907, University College, Reading.

(4) Bulletin No. 7 Armstrong College, Newcastle-upon-Tyne.

(5) Field Experiments in Staffordshire and Shropshire for 1907.